

7. (Once Amended) The ultrasonic transducer of Claim 2 wherein the cylindrical element has first and second opposite ends, further wherein the flux path means comprises first and second flux return elements carried by the housing, the first and second flux return elements located adjacent to the first and second ends of the cylindrical element [for capturing magnetic flux through the cylindrical element].

10. (Once Amended) The ultrasonic transducer of Claim 1 [further comprising magnetic means for biasing the active element] wherein the biasing means is a magnetic means.

14. (Once Amended) The ultrasonic transducer of Claim 1 [for use with a cooling fluid, the transducer including] wherein the cooling means comprises a passageway about the transducer adapted to receive [the] a cooling fluid, the passageway formed from a material which is an electrical insulator.

19. (Twice Amended) A high power ultrasonic transducer comprising a housing having a predetermined geometry, means carried by the housing for providing power in excess of three kilowatts, including a transducer having a cylindrical actuation element made from a giant magnetostrictive material and a coil made from electrically conductive wire concentrically disposed about the cylindrical element for producing an electromagnetic field that extends through at least a portion of the cylindrical element, the cylindrical element changeable between a first shape when in the absence of the magnetic field and a second shape when in the presence of the magnetic field, biasing means for biasing the cylindrical element, flux path means for capturing magnetic flux through the cylindrical element, means for providing an electrical signal to the means for producing an electromagnetic field, means for supplying an electrical signal to the coil, cooling means for actively cooling the cylindrical element and an acoustic element connected to the transducer for vibrating at an ultrasonic frequency in response to the transducer for performing work, the transducer capable of performing work on a continuous basis.

20. (Twice Amended) The ultrasonic transducer of Claim 19 [further comprising] wherein the cooling means [for actively cooling the transducer which] includes a fluid-carrying passageway which extends about the transducer, wherein the passageway is an electrical insulator.

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on July 19, 2002, and the documents cited therewith.

Claims 1, 3, 7, 10, 14 and 19-20 are amended; as a result, claims 1-8, 10-14, 16-20, 22, 24, 25, and 27-74 are now pending in this application.

Applicant's representative, Barbara J. Clark, conducted a brief telephonic interview with the Examiner on October 17, 2002 to discuss the outstanding rejections. The Examiner suggested some general claim language to overcoming the outstanding rejections. Ms. Clark thanks the Examiner for the courtesies extended during this interview.

Applicant further notes the inadvertent omission of claims 24, 27, 28 and 32-74 in the "Clean Version of Pending Claims" in the response mailed on June 26, 2002. As the Examiner correctly states, these claims are not cancelled and appear in the "Clean Version of Pending Claims" attached hereto.

The claims have been amended to define Applicant's invention with greater particularity. The amendments to the claims have support throughout the specification. No new matter has been added as a result. The amendments are made to clarify the claims and are not intended to limit the scope of equivalents to which any claim element may be entitled. Applicant respectfully requests reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

§112 Rejection of the Claims

Claims 1-8, 10-14, 16-20 and 22 were rejected under 35 USC § 112, first paragraph, as based on a disclosure which is not enabling.

Applicant has amended the claims for clarification. Reconsideration and withdrawal of the rejection of these claims is respectfully requested.

Claims 1-8, 10-14, 16-20 and 22 were rejected under 35 USC § 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements.

Applicant has amended the claims for clarification. Reconsideration and withdrawal of the rejection of these claims is respectfully requested.

Allowable Subject Matter

Applicant notes with appreciation the allowance of claims 24, 25 and 27-74.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

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Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (515) 233-3865 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 18th day of October, 2002.

Dawn M. Poole
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